

## Predictive Model for Return to Work After Elective Surgery for Lumbar Degenerative Disease: An Analysis from National Neurosurgery Quality Outcomes Database Registry

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### Introduction

The current costs associated with spine care are unsustainable. The productivity loss and time away from work in gainfully employed patients contributes greatly to the financial burden. Therefore, it is vital to identify the factors associated with returning to work after lumbar spine surgery. We present a predictive model of ability to return to work (RTW) after lumbar spine surgery for degenerative spine disease.

### Methods

Total 4,694 patients undergoing elective spine surgery for degenerative lumbar disease that were employed were entered into a prospective multi-center registry(N2QOD). Baseline and 3-month postoperative patient-reported outcomes: ODI, EQ-5D, NRS back and leg pain were recorded. The time to RTW was defined as the period between operation time and date of returning to work. A multivariable Cox proportional hazards regression model, including an array of preoperative factors, was fitted for RTW. The model performance was measured by the c-index

### Results

82% of patients(n=3,855) returned to work within 3-months postoperatively. The risk-adjusted predictors of lower likelihood of RTW were preoperatively employed but not working at the time of presentation, those occupied with manual labor, on worker's compensation, on liability insurance, baseline ODI and NRS-BP scores, female gender, African-American race, history of diabetes, and higher ASA grades. The likelihood of RTW within 3 months was higher in patients with higher education level compared to those with less than high school level education. The c-index of our model performance was 0.71.

### Conclusions

We present a novel predictive model for probability of RTW after lumbar spine surgery. Spine care providers can use this model to educate patients and encourage them in shared decision-making regarding the RTW outcome. This will result in better communication between patients and clinicians and improve recovery expectations, which will ultimately increase the likelihood of a positive RTW trajectory.

### Learning Objectives

The ability to return to work after lumbar spine surgery is an important measure of improvement following surgery. Therefore, it is vital to identify which factors can predict the ability of RTW in patients undergoing spine surgery.

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